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In re Patent Application of

GUANG YANG

For

“Integrated Database Data Editing System”

filed with the USPTO

**STATEMENT CLAIMING SMALL ENTITY STATUS
(37 CFR 1.9(f) & 1.27(b))--INDEPENDENT INVENTOR**

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Applicant, Patentee, or Identifier: GUANG YANG

Application or Patent No.: _____

Filed or Issued: _____

Title: Integrated Database Data Editing System

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Guang Yang
NAME OF INVENTOR

NAME OF INVENTOR

NAME OF INVENTOR

Guang Yang
Signature of inventor

Signature of inventor

Signature of inventor

9/26/2000
Date

Date

Date

5 INTEGRATED DATABASE DATA EDITING SYSTEM

10 FIELD OF THE INVENTION

This invention relates to the field of computer database data integrated editing system, more specifically to a novel system and methods, which directly retrieve database text and binary data, modify the data and then send the data back to the original database through either intranet or Internet.

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BACKGROUND OF THE INVENTION

Computer database is the central data repository place for most software applications. The database stores data temperately or permanently, and in most cases the database data needs to be dynamically input, output, modified or updated frequently. In most business applications, especially the e-commerce applications such as product catalogues or product advertisement, the data stored in database is not only the text or character data, but also more likely the binary (or digital) data, such as image, audio, animation, video or compiled software program, etc. One of the best practices for network software applications is to separate the data contents and the data presentation, which means that the data contents need to be stored in database and then passed to the Windows Graphic User Interface (GUI) or web page for presentation. So, an efficient and easy-to-use database data editing system is urgently needed to input, output and edit the database data contents for these business software applications.

Most commercial relational databases, such as Oracle database and IBM DB2, support the Large Object (LOB) data types, which mainly include the Character Large Object (CLOB) and the Binary Large Object (BLOB). The CLOB data type supports text

(ASCII, 8-bit) or character (16-bit) data, and the BLOB data type supports multimedia data such as image, audio, animation, video, compiled software program, etc. Furthermore, the Oracle database also supports LONG, LONG RAW, NCLOB and BFILE data types. The LONG stands for text or character data. The LONG RAW stands for long binary data. The NCLOB is for multibyte character set. The BFILE stands for Binary File which cannot be directly stored inside the database. The DB2 supports DBCLOB data type, which stands for Double Byte Character Large Object. All of the LOB data types can store the data size up to 2 Gigabytes or 4 Gigabytes, and the data is stored either inside the database or outside the database as "out-of-line" data. The DataBase Management System (DBMS) of a relational database uses a Locator that is stored inside the database to refer or point to the actual data when the data is stored either as a separate data set or outside the database. The LOB data values are manipulated and processed by the DBMS using the built-in specific functions and procedures, which is very difficult to handle even for the computer software professionals.

The present invention is directed to a novel integrated database data editing system, which uses the visual GUI and tools to directly modify and edit the database data in an efficient and easy-to-use manner. The data editing system can edit both the text data and the binary data such as image, audio or video data by incorporating several commercial text and multimedia data editors installed on the local client computer. The editing system is implemented as a client/server version and a web version to remotely edit the database contents through either intranet or Internet. While the prior art may offer some useful methods and mechanisms for editing individual, separate data types and data files, none of them provide the integrated system and advantages to be gained by this invention. Such prior art is reflected in the following U.S. Patents:

a.) No. 5,864,682, to Porter et al., discloses a method and apparatus for use in a digital video delivery system, where a digital representation of an audio-visual work, such as MPEG file, is parsed to produce a tag file. The tag file includes information about each of the frames in the audio-visual work. During the performance of the audio-visual work, data from the digital representation is sent from a video pump to a decoder. Seek operations are performed by causing the video pump to stop transmitting data from the current position in the digital representation, and to start transmitting data from a new

file which can be selected to present a choice of fields to be viewed simultaneously on the same screen. The fields represent a collection of columns which are a subset of the columns of the entire file. The system presents selected columns of data in a narrow width to facilitate viewing, comprehending, and/or editing the data.

5 e.) No. 6,105,055, to Pizano et al., is related to a multimedia collaboration system combines unique multimedia communication and media processing mechanisms with off-the-shell components which support information sharing and distribution. More specifically, the system provides an asynchronous multimedia collaboration whiteboard that enables the creation of messages containing synchronized voice, graphics and mouse
10 gestures to describe conditions associated with an underlying multimedia object. On the server side, the system includes a delayed conference manager connected to a conference database, an email server, a newsgroup server and a web server. On the client side, the system includes a dynamic annotation editor which enables the use of synchronized voice, graphics and mouse gestures in the discussion. The client side also includes a
15 newsgroup and reader and a web browser.

The foregoing prior art presents several methods or systems for editing audio or video data, or retrieving or viewing database data. However, none of them give the mechanisms, versatility and advantages in the manner of the present invention.

20 SUMMARY OF THE INVENTION

This invention is directed to an integrated database data editing system that provides a visual environment and tools for database to input, output, modify and update the database data contents in an efficient and easy-to-use manner. This editing system is extremely useful for editing large database objects such as large text files, audio, image,
25 animation and video binary data files. The system consists of a computer server containing a relational database which supports large data objects and a computer client. The server and client are linked on either intranet or Internet. The client sends query to the database through the network to retrieve a set of the data, and materializes the data to display on the client screen either as the Windows Graphic User Interface (GUI) forms or
30 web pages. The data table displayed on the client screen is defaulted as read-only. When the mouse "single-clicks" on a table cell, the data of the cell can be directly edited by the

actions of inserting, overwriting, deleting, copying, pasting, etc. When the mouse "double-clicks" the table cell, a default data editor installed on the client computer is popped up depending on the data type of the cell. If the data is text or character data type, a Notepad or Wordpad pops up. If the data is binary image, an Image or Paint Shop
5 pops up. If the data is binary audio or video, a multimedia editor such as AudioStation 32, Animation Shop or VideoStudio pops up. A list of the data editors installed on the client computer is also provided to the user. The data file is then uploaded into the data editor, and the user edits the data by using the facilities provided by the editor. When the user finishes the data editing, the data file is directly saved and transferred to the remote
10 database through the network.

There are two implementing versions for the data editing system, a client/server version and a web version. The client/server version is installed and run on the intranet. The Window GUIs are implemented by using Java AWT, Swing, Applet, or alternately Visual C++, Visual Basic, etc. The query and data is transferred by SQL, JDBC/ODBC
15 between the client and the server database. The Database Data Manager form is similar to a Windows Explorer and contains a Header Panel and a Detail Panel. The Header Panel lists the database tables. The Detail Panel consists of several folders, which include the Entity Relationship Designer, Table Designer, Database Schema, Data Filter and SQL Console. When the mouse clicks a table name listed on the Header Panel, the
20 table contents are retrieved from the remote database and displayed on the screen as a Single Document Interface (SDI) table. The user can also select and click multiple table names, then the Multiple Document Interface (MDI) tables are displayed. The data on a table cell is default as read-only. The user single-clicks a cell to directly edit the data of the cell, and double-clicks a cell to pup up a data editor. The user can edit the data by
25 using the facilities provided by the data editor, and directly send the data back to the original database.

The web version of the data editing system consists of a server containing a database and a web server and a client with a browser. The editing system is mainly implemented by using Java technologies. The JDBC/ODBC is used to retrieve and
30 transfer data from the database, the Servlets and Java ServerPages are used to implement the middle ware, and the HTML, DHTML, JavaScript and Applets are used to implement

the web pages. The Database Data Manager page, similar to the Windows GUI Database Data Manager of the client/server version, is comprised of a Header Frame and a Detail Frame. When the user clicks a table name on the Header Frame table list, a new web page containing the table data is displayed. The data on the table cell is default as read-
5 only. When the user single-clicks a cell, the data can be directly edited, and the user double-clicks the cell, a data editor installed on the local client computer pops up. When the user finishes the data edition, the data is directly sent back to the original database through the Internet.

The other computer languages, such C++, C, Visual C++, Visual Basic, etc., can
10 also be used to implement both the client/server version and the web version of the editing system. The Secure Socket Layer (SSL), Secure Electric Transaction (SET) and Public Key Infrastructure (PKI) technologies are used for secure data transmission through the Internet. The user authentication and access control mechanisms are also used to identify the users.

15 BRIEF DESCRIPTION OF DRAWING

Figure 1 is a general schematic representation of the integrated database data editing system.

Figure 2 is a schematic representation of the client/server version of the integrated
20 database data editing system.

Figure 3 is a schematic representation of the detail mechanisms and Windows GUI forms of the client/server version of the integrated database data editing system.

Figure 4 is a schematic representation of the web version of the integrated
25 database data editing system.

DETAILED DESCRIPTION OF THE INVENTION

This invention represents an integrated database data editing system that provides a visual environment and tools to input, output, modify and update the database data contents in an efficient and easy-to-use manner. The data editing system is extremely
30 useful for editing large database objects such as large text file, audio, image, animation and video binary data files by using the incorporated commercial data editors. The data

editing system is mainly designed and implemented by using current Java technologies. Figure 1 demonstrates that the database data editing system consists of a computer server 10 containing a relational database 11 which supports large text and binary data objects and a computer client 8 supporting the graphic user interfaces. The server and client are
5 linked on either intranet or Internet 9. The client computer contains a Database Data Manager user interface, which provides the necessary environment and tools to edit the database data. The client sends query to the remote database through the network 9 to retrieve a set of the data. The database data is returned from the remote database to the client, and then materialized to display on the client screen either as the Windows
10 Graphic User Interface (GUI) forms or web pages. The database table 2 displayed on the client screen is defaulted as read-only 3. When the mouse "single-clicks" on a table cell 4, the data of the cell is directly edited by the action of inserting, overwriting, deleting, copying, pasting, etc. When the mouse "double-clicks" a table cell 5, 6, a default data editor 1, 7 installed on the client computer is called and popped up depending on the data
15 type of the cell. A list of the commercial data editors installed on the client computer is also provided to the user to choose. The data file is then automatically uploaded into the data editor. The user uses the data editor to edit the data file, and then send the data file back to the remote database through the network.

There are two implementation versions for the database data editing system of the
20 present invention, a client/server version and a web version. Figure 2 demonstrates the client/server version of the editing system which is installed and run on the intranet. The server computer 31 contains a relational database 30 which supports the large text or binary data objects (LOBs). The client Window GUIs 28 are implemented by using Java AWT, Swing, Applets, or alternately by Visual C++, Visual Basic, etc. The client GUI
25 forms and the server database communicate through the intranet 29. The client sends query to the remote database and the data is retrieved from the database by using SQL, JDBC/ODBC 29. The database data is then materialized and displayed on the client forms. The data cell 23 of the table form 22 is defaulted as read-only. When the mouse single-clicks on a cell of the table, the data of the cell 24 can be directly edited. When
30 the user double-clicks the table cell 25, 26, a default commercial text editor 21 or a multimedia editor 27 is called and popped up from the local client computer. Alternately,

very difficult to handle, and will greatly benefit the most business software applications and the general users. The Java technology is mainly used to implement the database data editing system of the present invention. Alternately, other computer languages, such C++, C, Visual C++, Visual Basic, etc., can also be used to implement both the

5 client/server version and the web version of the editing system. The user authentication and access control mechanisms of the database data editing system are well implemented. The Secure Socket Layer (SSL), Secure Electric Transaction (SET) and Public Key Infrastructure (PKI) technologies are used for secure data transmission through the Internet.